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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,155	01/14/2002	Matthew Thomas Mayer	RCA 89656	8661

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EXAMINER	
TRAN, TRANG U	
ART UNIT	**PAPER NUMBER**
2614	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,155	MAYER, MATTHEW THOMAS	
	Examiner	Art Unit	
	Trang U. Tran	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-7* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed July 25, 2005 have been fully considered but they are not persuasive.

In re page 4, applicant argues that the combination of Badger et al and Limberg does not teach or suggest a "means for determining the presence of said interference" and "a frequency conversion stage, coupled to said tuner, for converting in frequency the digital signal to an intermediate frequency (IF) signal to be output, where the center frequency of said IF signal is capable of being switched to a nominal frequency corresponding to the selected broadcast channel or to a second frequency being shifted from aid nominal frequency in accordance with the presence or absence of said interference determined by said determining means" as recited by the presently amended claim 1.

In response, the examiner respectfully disagrees. Limberg discloses in col. 7, lines 30-57 that any co-channel interfering analog TV signal can also be trap filtered in the "front end" electronics 10. Thus, the claimed "means for determining the presence of said interference" is anticipated by the "front end" electronics 10 of Limberg.

As stated in the last Office Action, Badger et al discloses the claimed "a frequency conversion stage, coupled to said tuner, for converting in frequency the digital signal to an intermediate frequency (IF) signal to be output, where the center frequency of said IF signal is capable of being switched to a nominal frequency corresponding to the selected broadcast channel or to a second frequency being shifted from aid nominal

frequency"; for example, the mixer 909, the local oscillator (LO) 911 which is coupled to a second input of mixer 909 and the frequency of LO 911 is controlled by a phase locked loop (PLL) arrangement 919 comprising a PLL integrated circuit (IC) 921, the terrestrial tuning PLL Ics are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20). However, Badger et al does not specifically disclose that the frequency conversion stage **is not response to the presence or absence of said interference determined by said determining means.**

Limberg as discussed above teaches the detecting of the co-channel interference.

When Badger et al and Limberg are combined as proposed by the examiner, the frequency conversion stage of Badger et al would in response to the presence or absence of said interference determined by said determining means as recited in claim 1 because Limberg teaches the detecting of the presence or absence of the interference.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Badger et al. (US Patent No. 5,739,874) in view of Limberg (US Patent No. 5,748,226).

In considering claim 1, Badger et al discloses all the claimed subject matter, note 1) the claimed a television receiver for receiving a digital television signal susceptible to inference caused by a lower adjacent analog television signal is met by the digital satellite television system (Fig. 1), 2) the claimed a tuner for receiving the digital signal associated with a broadcast channel selected from a plurality of channel locations in a frequency band is met by the outdoor unit 5 and the tunable bandpass filter 907 which selects the desired RF signal and rejects unwanted RF signals (Fig. 1, col. 4, line 33 to col. 5, line 23), 3) the claimed a frequency conversion stage, coupled to said tuner, for converting in frequency the digital signal to an intermediate frequency (IF) signal to be output, where the center frequency of said IF signal is capable of being switched to a nominal frequency corresponding to the selected broadcast channel or to a second frequency being shifted from said nominal frequency in accordance with the presence or absence of said interference determined by said determining means is met by **the mixer 909, the local oscillator (LO) 911** which is coupled to a second input of mixer 909 and the frequency of LO 911 is controlled by a **phase locked loop (PLL) arrangement 919** comprising a PLL integrated circuit (IC) 921, the terrestrial tuning PLL Ics are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col.

8, line 20), and 4) the claimed a filter, coupled to said frequency conversion stage, said filter having a center frequency equal to said nominal frequency is met by **the IF SAW** filter 915 which has a center frequency at 140 MHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

However, Badger et al explicitly do not disclose the claimed means for determining the presence of said interference, and the filter, coupled to said frequency conversion stage, attenuates adjacent signals and wherein the lower adjacent analog signal is further attenuated by said filter upon switching of the center frequency of IF signal to said second frequency.

Limberg teaches that any co-channel interfering analog TV signal can also be trap filtered in the "front end" electronics 10, ...preferably, a surface-acoustic-wave (SAW) filter is used in at least one intermediate-frequency band to shape channel selection response and reject adjacent channels, **this SAW filter** accordingly rejects the frequency modulated sound carrier of any co-channel interfering analog signal, the sound carrier frequency is 5.75 MHz from the lowest frequency limit of the TV channel and has maximum +40 kHz frequency swing (Fig. 1, col. 7, lines 19-57).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the front end for detecting the present of interference and **the SAW filter** which rejects the frequency modulated sound carrier of any co-channel interfering analog signal as taught by Limberg into Badger et al's system in order to increase the quality of the received video program by suppressing co-channel interference form analog television signals.

In considering claim 3, Badger et al discloses all the claimed subject matter, note 1) the claimed wherein said frequency conversion stage comprises: a local oscillator for generating a local oscillation signal is met by **the local oscillator (LO) 911** (Fig. 1, col. 5, line 15 to col. 8, line 20), 2) the claimed a phase-locked loop, coupled to said local oscillator, for controlling the frequency of said local oscillation signal is met by **the PLL IC 921** (Fig. 1, col. 5, line 15 to col. 8, line 20), 3) the claimed a mixer, coupled to said local oscillator, for heterodyning the digital signal with said local oscillation signal to generate said IF signal is met by **the mixer 909** (Fig. 1, col. 5, line 15 to col. 8, line 20), and 4) the claimed an IF filter, coupled to said mixer, for passing the lower band of said IF signal is met by **the IF SAW filter 915** which has a center frequency at 140 mHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

In considering claim 4, the claimed wherein said second frequency is said nominal frequency shifted upward by 62.5 kHz is met by the terrestrial tuning PLL Ics are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20 of Badger et al).

In considering claim 5, Badger et al discloses all the claimed subject matter, note 1) the claimed a method of receiving a digital television signal susceptible to interference caused by a lower adjacent analog television signal is met by the digital satellite television system (Fig. 1), 2) the claimed tuning a radio frequency (RF) signal

having a digital signal inband and a lower adjacent analog signal is met by the outdoor unit 5 and the tunable bandpass filter 907 which selects the desired RF signal and rejects unwanted RF signals (Fig. 1, col. 4, line 33 to col. 5, line 23), 3) the claim offsetting the frequency of a local oscillator (LO) signal upon determination of the presence of said interference is met by changing the frequency of the LO signal in relatively large incremental frequency steps, e.g., 62.5 kHz (Fig. 1, col. 5, line 15 to col. 8, line 20), 4) the claimed heterodyning said RF signal with said LO signal to generate a modified intermediate frequency (IF) signal having a frequency offset from nominal and within the passband of a filter is met by **the mixer 909, the local oscillator (LO) 911** which is coupled to a second input of mixer 909 and the frequency of LO 911 is controlled by **a phase locked loop (PLL) arrangement 919** comprising a PLL integrated circuit (IC) 921, the terrestrial tuning PLL Ics are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20), and 5) the claimed filtering said modified IF signal is met by **the IF SAW filter 915** which has a center frequency at 140 mHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

However, Badger et al explicitly do not disclose the claimed determining the presence of said interference, filtering said modified IF signal to attenuate said lower adjacent analog signal.

Limberg teaches that any co-channel interfering analog TV signal can also be trap filtered in the "front end" electronics 10, ...preferably, a surface-acoustic-wave (SAW) filter is used in at least one intermediate-frequency band to shape channel selection response and reject adjacent channels, this SAW filter accordingly rejects the frequency modulated sound carrier of any co-channel interfering analog signal, the sound carrier frequency is 5.75 MHz from the lowest frequency limit of the TV channel and has maximum +40 kHz frequency swing (Fig. 1, col. 7, lines 19-57).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the front end circuit for determining the present of the interference and the SAW filter which rejects the frequency modulated sound carrier of any co-channel interfering analog signal as taught by Limberg into Badger et al's system in order to increase the quality of the received video program by suppressing co-channel interference form analog television signals.

In considering claim 6, the claimed wherein offsetting the frequency of said LO signal comprises shifting the frequency of said L0 signal upward by 62.5 kHz is met by the terrestrial tuning PLL Ics are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20 of Badger et al).

In considering claim 7, the claimed further comprising: an AGC circuit indicative of the power of the digital television signal, wherein the determining means determines

the presence of the interference based on a comparison of said power with the power of the lower adjacent analog signal is met by col. 10, lines 3-29 of Limberg.

Allowable Subject Matter

4. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 identifies the distinct features: "where said microprocessor, in response to the absence of a lower analog signal adjacent to the digital signal, causes the center frequency of said IF signal to be switched to said nominal frequency; and said microprocessor, in response to the presence of a lower analog signal adjacent to the digital signal, causes the center frequency of said IF signal to be switched to said second frequency". The closest prior art, Badger et al. (US Patent No. 5,739,874) and Limberg (US Patent No. 5,748,226), either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT TT
October 14, 2005

JOHN MILLER
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